



600 Unicorn Park Drive σ Woburn, MA 01801

Phone: 781-932-3201 σ Fax: 781-932-3413

## MEMORANDUM

**TO:** David Hale  
**FROM:** Kenneth P. Cram, P.E.  
**CC:**  
**DATE:** October 16, 2020  
**RE:** Proposed Cedar Crossing and Cedar Edge Residential Development  
Triangle Intersection - Signalization Assessment  
Summer Street, Walpole, MA

---

This memorandum has been prepared to review signal warrants for the three intersections that generally form a triangle in Walpole, MA. These intersections include Summer Street at Neponset Street, Washington Street at Summer Street, and Washington Street, Washington Street Extension, Neponset Street at Water Street. Overall, the assessment of the intersection of Washington Street, Water Street, Washington Street Extension and Neponset Street indicates that this intersection would not meet warrants for signalization. Signalization of this intersection would not be recommended.

### TRAFFIC SIGNAL WARRANTS ANALYSIS

A traffic signal warrant analysis was performed in order to determine if the major intersections within the study area meet the guidelines for signal systems. The Federal Highway Administration has set forth guidelines included in the Manual on Uniform Traffic Control Devices (MUTCD) as to criteria that should be met for a location to warrant a traffic signal system versus other means of traffic control. Included in the MUTCD is a list of nine Warrants for a traffic signal system, at least one of which should be met in order to justify implementing a signal system. The following is a list of these nine warrants:

- Warrant No. 1, Eight-Hour Vehicular Volume
- Warrant No. 2, Four-Hour Vehicular Volume
- Warrant No. 3, Peak Hour
- Warrant No. 4, Pedestrian Volume
- Warrant No. 5, School Crossing
- Warrant No. 6, Coordinated Signal System
- Warrant No. 7, Crash Experience
- Warrant No. 8, Roadway Network
- Warrant No. 9, Intersection Near a Grade Crossing



The main intersection within the triangle intersections, Washington Street at Water Street, Neponset Street and Washington Street extension was reviewed to determine which, if any, of the nine warrants are met. The first three Warrants are related specifically to traffic volumes. MassDOT requires that at a minimum, the volume criteria in Warrant No. 1 be met for signalization. The warrants are based on both the number of vehicles on the major roadway as well as the number of vehicles on the minor roadway of the intersection.

### **Existing Conditions Assessment**

Existing traffic volumes and conditions were assessed against the MUTCD and MassDOT 2009 Amendments to the MUTCD warrant criteria to determine if signalization of the intersection would be warranted. The satisfaction of Warrant 1 is the expected MassDOT confirmation that would trigger consideration of a traffic signal. Following is a summary of the assessment:

Warrant No. 1: Based on the total volume of traffic turning left and right from Washington Street southbound, this intersection would not meet the conditions of Warrant No. 1. It should be noted that this warrant was based on only four (4) hours of data as eight (8) hour data was not available. These four (4) hours of data which encompass the weekday morning and weekday evening peak periods typically represent the highest traffic flows during the course of a day. Since these hours do not have volumes large enough to warrant signalization, the remaining hours of the day would also not warrant signalization.

Warrant No. 2: Based on the total volume of traffic turning left and right from Washington Street southbound, this intersection would not meet the conditions of Warrant No. 2.

Warrant No. 3: The results of the warrant analysis indicated that the intersection would meet Warrant No. 3 for the Peak Hour during weekday evening peak hour period. It should be noted that Warrant No. 3 is applied only in unusual cases (per the MUTCD).

Warrant No. 4: Field observations of pedestrian activity indicate that this warrant would not be met.

Warrant No. 5: There is no school crossing at the intersection, therefore Warrant No. 5 is not met.

Warrant No. 6: The intersection does not meet the requirements of Warrant No. 6.

Warrant No. 7: The intersection currently does not have a high crash rate and the rate of crashes does not yield a rate high enough to meet Warrant No. 7.

Warrant No. 8: The intersection does not meet the requirements of Warrant No. 8.

Warrant No. 9: The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal. This warrant does not apply as there is no nearby grade crossing.

Overall, the assessment of the intersection indicates that this location would not meet Warrants No. 1 or No. 2. The traffic volume criteria for Warrant No. 3 is met, but as previously stated, MassDOT requires that at a minimum, the volume criteria in Warrant No. 1 be met for signalization. Signalization would not be recommended.

### **Future Build Conditions Assessment**

Future build traffic volumes and conditions were also assessed against the MUTCD warrant criteria to determine if signalization of the intersection would be warranted. Following is a summary of the assessment:

Warrant No. 1: Based on the total volume of traffic turning left and right from Washington Street southbound, this intersection would not meet the conditions of Warrant No. 1. Again it should be noted that this warrant was based on only four (4) hours of data as eight (8) hour data was not available. Also, the weekday morning and weekday evening peak hour site generated volumes were used for the peak periods.

Warrant No. 2: Based on the total volume of traffic turning left and right from Washington Street southbound, this intersection would meet the conditions of Warrant No. 2. However, it should be noted that the proposed traffic from the project will not increase the critical movements (left and right turns from Washington Street southbound) at the intersection.

Warrant No. 3: The results of the warrant analysis indicated that the intersection would meet Warrant No. 3 for the Peak Hour during weekday evening peak hour period. It should be noted that Warrant No. 3 is applied only in unusual cases (per the MUTCD).

Warrant No. 4: Field observations of pedestrian activity indicate that this warrant would not be met.

Warrant No. 5: There is no school crossing at the intersection, therefore Warrant No. 5 is not met.

Warrant No. 6: The intersection does not meet the requirements of Warrant No. 6.

Warrant No. 7: The intersection currently does not have a high crash rate and the rate of crashes does not yield a rate high enough to meet Warrant No. 7.

Warrant No. 8: The intersection does not meet the requirements of Warrant No. 8.

Warrant No. 9: The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal. This warrant does not apply as there is no nearby grade crossing.

Overall, the assessment of the intersection indicates that this location would not meet Warrant No. 1. The traffic volume criteria for Warrant No. 2 and Warrant No. 3 is met, but as previously stated, MassDOT requires that at a minimum, the volume criteria in Warrant No. 1 be met in order to consider signalization. Signalization of the Triangle Intersection would not be recommended.